DLMS INTRODUCTORY TRAINING
Module 5 – IUID & RFID - Emerging Technologies

Defense Logistics Management Standards (DLMS)
Introductory Training

IUID & RFID - Emerging Technologies

DLMS Training Catalog

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Module 11 - Creating/Reengineering DOD Logistics (standalone)

www.dla.mil/does/DLMS
Module Structure

Module 5 – IUID & RFID - Emerging Technologies

- Item Unique Identification (IUID)
- Radio Frequency Identification (RFID)

Module 5 Objectives

- IUID and its relationship to the DLMS
- RFID and its relationship to the DLMS
- DLMS Transactions supporting IUID and RFID
- Data integration of Supply and Transportation Information
- Establishing parent/child relationships using DLMS transactions
Unique Item Identification (IUID), Radio Frequency Identification (RFID), & DLMS

IUID, RFID, & DLMS Relationship

- The IUID is a data set that identifies an instance of an item uniquely from all others even if it is identical to others in all other physical and functional aspects.

- RFID is an automatic identification method, consisting of a chip and antenna, relying on storing and remotely retrieving data using devices called RFID tags or transponders.

- The DLMS X12 EDI and DLMS XML provide the capability to integrate the RFID tag contents with the business data and processes in the supply chain.

IUID, RFID, and DLMS complement each other in providing business event intelligence across the supply chain.
IUID-RFID Policy Relationship
(Example)

Where required: Passive RFID tags applied at the case, pallet and package layers
Where required: IUID attached or directly marked on items using a data matrix to carry the IUID data elements

Unique Identification (IUID) of Tangible Items
DOD Vision for IUID

- Establish a strategic imperative for uniquely identifying tangible items relying to the maximum extent practical on international standards and commercial item markings, while not imposing unique government data requirements.

- Unique identification of tangible items will improve:
  - Item visibility and tracking across the DOD enterprise
  - Product life-cycle item management
  - Financial Accountability and valuation of assets
  - Clean Audit Opinions on Property, Plant Equipment, and Operating Materiels and Supplies
  - Data quality and interoperability

IUID Policy Overview

DoD Instruction (DoDI) 8320.04, "Item Unique Identification Standards for Tangible Personal Property"

- DoDI 8320.04 states that items with a unique item-level traceability requirement at any time in their life cycle shall be marked and managed by UII to include as a minimum:
  1. Major end items
  2. Depot level reparables
  3. Nuclear weapons-related materiel
  4. Small arms and light weapons
  5. Items with a classified, sensitive, or pilferable controlled inventory item code
  6. Critical safety items
  7. Items currently serially managed or warranted, including items in unique item tracking programs
  8. Items that require periodic test, calibration, or safety inspection
  9. Items that require technical directive tracking
  10. Items requiring intensive visibility and management
  11. Other items, as determined by the requiring activity

- Under the authority, direction, and control of the USD(A&S), the ASD(S) develops IUID supply chain policy and coordinates functional business rules and approves requirements for the DOD IUID Registry jointly with the Director, Defense Pricing and Contracting

- Under the authority, direction, and control of the ASD(S), the Director, DLA will coordinate and publish procedures and transaction exchange formats to incorporate the UII in logistics business processes under the Defense Logistics Management Standards (DLMS) in accordance with DLM 4000.25.

- Policy continues to evolve! The latest policies and information on IUID can be found at: [http://www.acq.osd.mil/dpap/pdi/uid/index.html](http://www.acq.osd.mil/dpap/pdi/uid/index.html)
Radio Frequency Identification (RFID)

- **Active RFID - Longer range**
  - Continuously powered tag; internal power source
  - Low-level RF signal received by the tag
  - High-level RF signal back to the reader/interrogator
  - Usually used for longer tag read distances
  - Can store 128KB of data, to include tag number

- **Passive RFID – Shorter range**
  - No internal power source; collects energy from reader
  - Needs powerful RF signal from reader
  - Low RF strength signal returned from tag
  - Preferred for uses when tag and interrogator are close
  - Stores small amount of data (e.g., tag number)
pRFID - Optimize the Supply Chain

DOD is an early adopter of passive pRFID technology

- Implement passive RFID Business Rules - 1 Jan 05
  - Passive tagging of materiel shipped to DOD
- Initial DOD capability to read passive RFID tags and use data
- Published DFARS Rule requiring application of passive RFID
- Integrated passive RFID data into the DOD Business Enterprise Architecture (e.g., DLMS)
- USTRANSCOM is the DOD functional proponent for AIT
- The latest policy and information on DOD’s RFID implementation can be found at:
  - https://www.ustranscom.mil/cmd/associated/ait/

Hands-Off Data Capture
- Improve Data Accuracy
  - Improve Logistics Processing Time
  - Improve Manpower Utilization
  - Enhance Interoperability with Industry

Nodal Asset Visibility
**Nodal Asset Visibility**

- **856S**: Supply Shipment Status
- **856A**: Transportation Due-In
- **315N**: Transportation Status
- **IGC**:

**pRFID & DLMS (Enhanced Receiving)**

- **856S**: 2F02032533139342DFDC1C35 is associated to requisition V033652740001

- **Transactions with pRFID**

- **DAAS**

- **856S**

- **RDDC**

- **Tagged Material**

- **Camp Pendleton**

RFID and relevant business information preloaded to the receiving facility. Use to automatically trigger receipt processes upon material arrival.
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pRFID & In-Transit Visibility

Report RFID Tag read event data to DAAS
User can query WEBVLIPS or IGC to ascertain last known location of RFID tagged material.

Transactions with RFID

DDJC - CCP

XML Visibility

Data Elements:
- RFID Tag # = 2F02032533139342
- Time Stamp = 7/4/2010 0900
- Location = CCP
- Business Step = Shipped

IUID, pRFID & DLMS Operating In Concert Can Significantly Enhance DOD Supply Chain Processes

- Establish initial acquisition cost and subsequent valuations
- Identify a particular item requiring maintenance
- Identify particular problem items to be singled out for removal or upgrade
- Ensure that exact items are returned to the customer
- Locate items for expedited processing
- Maintain a record of items where DOD ownership has ended
- Track a particular item through the entire Supply Chain
DLMS Transactions Supporting IUID

<table>
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<th>DLMS IMPLEMENTATION CONVENTION</th>
<th>Business Requirement</th>
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<td>527D</td>
<td>527D Due-in, Advance Receipt, Due Verification</td>
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<td>527R</td>
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<td>842S/Q Storage Quality Control Report</td>
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<td>842S/R</td>
<td>842S/R Storage Quality Control Report Reply</td>
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<tr>
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<td>947I Inventory Adjustment</td>
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</table>

NOTE: Logistics IUID business requirements are under development through a series of IUID Workshops; business rules for implementation will be documented, staffed, and finalized through the DLMS configuration management process. Some transactions on this list may be removed if there is no business requirement.

Current list of transactions available under http://www.dla.mil/HQ/InformationOperations/DLMSO/other_activities/IUID/

DLMS Supporting Passive RFID

- 856 Advance Shipping Notice
- 856R Shipment Status Material Returns
- 856S Shipment Status
- XML Reader Registration
- XML Visibility Response
- XML Visibility
Example of Providing In The Box Visibility via 856 ASN

- Provide receiving activity with in the box visibility of an incoming shipment at the time of shipment.
- Computer system supporting the packing/shipping function builds out the 856 ASN.
- As the packer scans items and the Box & Pallet RFID Tags the system builds the Loops.
- The system receiving the 856 ASN decomposes the hierarchical structure to convey in the box information for use upon physical receipt.

Illustrative Example of IUID and pRFID Transmissions via 856 ASN

The 856 ASN uses a hierarchical structure to convey information and establish relationships:
- Between the shipment/contract and the individual line items which compose the shipment
- Between the CLIN and the uniquely identified items associated with the CLIN
- Between the tagged containers (case or pallet) and the number of items and the UIIs of uniquely identified items they contain
- Between tagged containers (cases on a pallet)
IUID and RFID in 856 ASN

The HL loops are defined as Shipment (DD 250 level) (HL03=S), Address (HL03=V), Line Item (HL03=I), IUID (HL03=D), embedded UII (HL03=E), and pRFID (HL03=P)

- The IUID loop includes:
  - The SLN segment with IUID pedigree information: acquisition cost, unique item identifier (UII) type, enterprise identifier and original part number, when applicable
  - A separate REF with the UII and serial number for each item with the same pedigree in the SLN
- pRFID loop includes:
  - The REF with the RFID tag value and a separate REF for each UII, when applicable -- it tells you which items are in which container
  - The Destination Quantity (SDQ) with the CLIN and the Quantity of that line item packed under the RFID to which the SDQ is associated -- it tells you how many of which CLIN are identified to which RFID tag

Multiple CLINs in Multiple Cases with Multiple CLINs per Case and Multiple Cases per CLIN on a Pallet

One Shipment Sitting on an RFID Tagged Pallet Containing

- Four different Items with the notional FSNs:
  - ABC quantity of 4
  - DEF quantity of 4
  - GHI quantity of 2
  - JKL quantity of 2
- Each of the 12 items has a UII
- The Items are Packed in Four Boxes each with an RFID Tag

Question: In advance of the Physical Receipt or upon Receipt Without Opening the Boxes, How Can We Determine:
- Which UIIs are on which item
- Which items are in which Box?
Multiple CLINs in Multiple Cases with Multiple CLINs per Case and Multiple Cases per CLIN on a Pallet

At This Point: We Know the Items That Are Being Shipped. But We Don’t Know Which Ones Are In Which Boxes.

Now We know that the Box 1 with RFID Tag #1 is on the Pallet with RFID Tag #3. We also know that Box 2 contains 3 ABC and the quantity of 3 of item ABC and the item with a UII of 9.
**Module 5 Quiz**

**Question 1**: Which of the following is a key advantage associated implementing and integrating IUID into supply chain processes?

a) Enhance Total Asset Visibility; Improve Life-Cycle Item Management and Accountability; Improve Data Quality and Interoperability

b) Clean Audit Opinions on Property, Plant & Equipment, Operating Materials and Supplies

c) Both a & b

**Question 2**: What benefits does RFID provide to DOD?

a) Hands-off data capture

b) Improve Data Accuracy

c) Improve Logistics Processing Time

d) All of the above

**Question 3**: To improve material visibility across the supply chain which of the following technologies does DOD need to implement?

a) IUID

b) RFID

c) DLMS

d) All the above
End of Module 5